Moth traps using sticky paper, blue LED light, UV light bug zapper and pheromone

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https://sites.google.com/view/low-tech-farm-tools

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Moths are nocturnal and use moonlight to navigate. UV light and blue LED light (nightlight) simulates moonlight and attract moths. Bug zappers use UV light to attract and high voltage electric grid to kill moths. However, moths are not attracted to electric wire grid. Replace the electric wire grid with sticky paper; use UV light or blue LED light and sticky paper to trap moths.

Earlier experiment

To control the grain moth population inside a grain storage shed, a 15-watt "Stinger" bug zapper (model UV 15) was installed. The bug zapper was set on top of a 20 x 30 inch paper (dog food bag) coated with a sticky paste ("Stickem", available from Peaceful Valley Farm Supply www.groworganic.com , or Planet Natural www.planetnatural.com). A grain moth pheromone lure (The Pantry Pest Trap from "SureFire", available from Peaceful Valley Farm Supply and Planet Natural) was attached on top of the bug zapper. The number of moths trapped using the bug zapper plus sticky paper and pheromone (method **A**) was compared with the bug zapper alone (**B**), bug zapper plus sticky paper (**C**), and pheromone with sticky paper (**D**). The bug zapper was turned on during the peak moth activity period, 2 hours before and 2 hours after sunset.

Results

Date and number of moths killed

Date, 1999	(**A**) Bug zapper + pheromone + sticky paper			(**B**) Bug zapper alone
	Under zapper	on paper	total	
June 21	12	5	17	10
22	10	18	28	7
23	18	100	118	14
24	13	81	94	31
				(**C**) Bug zapper + sticky paper
27	5	6	11	29
28	1	10	11	17
29	13	28	41	38
30	69	160	229	113
				(**D**) Pheromone + sticky paper
July 1	6	5	11	19
2	4	8	12	18
4	1	9	10	1
5	17	19	36	4
6	34	69	103	6
11	47	48	95	17
12	28	96	124	37

Discussions

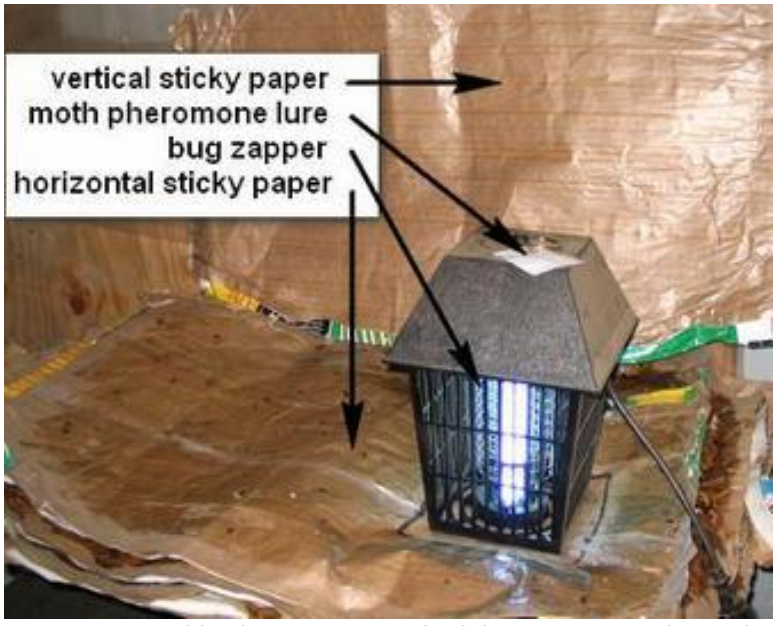
- When using the bug zapper plus pheromone and sticky paper, method **A**, number of moths on sticky paper (column 3) was 3 times more than the number of moths under the electric wire grid of the zapper (column 2). Thus, sticky paper was more effective than electric wire grid in trapping moths.

- The bug zapper plus pheromone and sticky paper (method **A**) killed 4 times more moths than the bug zapper alone (method **B**) without pheromone or sticky paper, June 21-24 data. Pheromone or sticky paper or both contribute to number of moths trapped.

- There was insufficient data to determine statistical difference between the bug zapper plus pheromone and sticky paper (method **A**) versus bug zapper and sticky paper (method **C**) without pheromone (June 27-30 data). Method **A** trapped more moths on June 29 and 30; method **C** trapped more moths on June 27 and 28.

- On average, the bug zapper plus pheromone and sticky paper method (**A**) trapped 7 times more moths than pheromone and sticky paper (**D**), without bug zapper, July 1-12 data. UV light from the bug zapper contributed to number of moths trapped.

- In a separate test, the bug zapper with the pheromone lure was placed on top of the sticky paper 8 inches away from a wall. Another sticky paper was attached to the wall behind the bug zapper. At the end of a week, there were over 300 moths on the horizontal sticky paper under the bug zapper and 15 moths on the vertical sticky paper attached to the wall. Vertical placement of the sticky paper was not effective in trapping moths. For moths to land on the vertical surface, they would turn their backs to the light source, whereas, moths could land on the horizontal surface while facing the light source.



Bug zapper with pheromone and sticky paper. Horizontal sticky paper was effective but vertical sticky paper was not effective.

Revised method: sticky paper and blue LED light

The moth data was re-interpreted. Moths are attracted to UV light, not the high voltage electric wire grid in the bug zapper. Bug zapper + pheromone + sticky paper (method **A**) killed more moths than bug zapper alone, without pheromone and sticky paper (method **B**); or pheromone + sticky paper, without UV light (method **D**). Thus, UV light and sticky paper are significant contributors to trapping moths. Replace the bug zapper with blue LED light or UV light. The blue LED light uses less than 1 watt compared to 15-watt bug zapper.

When comparing bug zapper + pheromone + sticky paper (method **A**) with bug zapper + sticky paper (method **C)**; no statistical difference in number of moths trapped between with or without pheromone. Moths have their own pheromone. Once a moth is stuck on the paper, it becomes a source of pheromone to attach other moths.

Sticky paper with blue LED light, 2-day exposure in April when moths emerge.

Sticky paper with LED light, 2-month exposure in June to July.

Conclusion:
Blue LED light placed on top of a sticky paper was sufficient to trap moths. Pheromone lure and high voltage wire grid did not contribute to statistical difference in number of moths trapped.

Note: Mention of product and company names does not imply endorsement.